APPENDIX A
DATA VALIDATION REPORTS

LABORATORY DATA CONSULTANTS, INC.
2701 Loker Ave. West, Suite 220, Carlsbad, CA 92010 Bus: 760-827-1100 Fax: 760-827-1099

Anchor QEA, LLC
720 Olive Way, Suite 900
Seattle, WA 98101
ATTN: Ms. Cindy Fields

March 25, 2016

SUBJECT: Jorgensen Forge EAA, Data Validation

Dear Ms. Fields,

Enclosed is the final validation report for the fractions listed below. This SDG was received on March 18, 2016. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project #36049:

SDG #	Fraction
AVZ9	Polychlorinated Biphenyls, Metals, Wet Chemistry

The data validation was performed under Stage 2B guidelines. The analyses were validated using the following documents, as applicable to each method:

- Attachment 1 of the Quality Assurance Project Plan, Addendum No. 2 to the Operations, Monitoring, and Maintenance Plan for Jorgensen Forge Early Action Area, September 2015
- USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review, June 2008
- USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Method Data Review, October 1999
- Quality Assurance Project Plan, Addendum No. 2 to the Operations, Monitoring, and Maintenance Plan for Jorgensen Forge Early Action Area, September 2015
- USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review, October 2004
- EPA SW 846, Third Edition, Test Methods for Evaluating Solid Waste, update 1, July 1992; update IIA, August 1993; update II, September 1994; update IIB, January 1995; update III, December 1996; update IIIA, April 1998; IIIB, November 2004; Update IV, February 2007

Please feel free to contact us if you have any questions.

Sincerely,

Christina Rink
Project Manager/Chemist

HC 1 WEEK TAT - no surcharge

Attachment 1

EDD Stage 2B

LDC #36049 (Anchor Environmental-Seattle WA / Jorgensen Forge EAA)

LDC	SDG#	DATE REC'D	(3) DATE DUE	PCBs (8082A)		Metals (6020A /7000)		Grain Size (PSEP)		TOC (Plumb)		Total Solids (2540G)																							
Matrix: Water/Sediment				W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S
A	AVZ9	03/18/16	03/25/16	1	17	1	16	0	16	0	16	0	16																						
Total	T/CR			1	17	1	16	0	16	0	16	0	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	83

Shaded cells indicate Stage 4 validation (all other cells are Stage 2B validation). These sample counts do not include MS, MSD, or DUP's.

V:\LOGIN\Anchor\Jorgensen\36049ST.wpd

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Jorgensen Forge Early Action Area

LDC Report Date: March 21, 2016

Parameters: Polychlorinated Biphenyls

Validation Level: Stage 2B

Laboratory: Analytical Resources, Inc.

Sample Delivery Group (SDG): AVZ9

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
JF-PDS-6-0-1ft-160209	AVZ9A	Sediment	02/09/16
JF-PDS-6-1-2ft-160209	AVZ9B	Sediment	02/09/16
JF-PDS-4-0-1ft-160210	AVZ9C	Sediment	02/10/16
JF-PDS-4-1-2ft-160210	AVZ9D	Sediment	02/10/16
JF-PDS-2-0-1ft-160210	AVZ9E	Sediment	02/10/16
JF-PDS-2-1-2ft-160210	AVZ9F	Sediment	02/10/16
JF-PDS-1-0-1ft-160210	AVZ9G	Sediment	02/10/16
JF-PDS-1-1-2ft-160210	AVZ9H	Sediment	02/10/16
JF-PDS-3-0-1ft-160211	AVZ9I	Sediment	02/11/16
JF-PDS-3-1-2ft-160211	AVZ9J	Sediment	02/11/16
JF-PDS-103-1-2ft-160211	AVZ9K	Sediment	02/11/16
JF-PDS-5-0-1ft-160211	AVZ9L	Sediment	02/11/16
JF-PDS-5-0-1ft-160211DL	AVZ9LDL	Sediment	02/11/16
JF-PDS-5-1-2ft-160211	AVZ9M	Sediment	02/11/16
JF-PDS-105-0-1ft-160211	AVZ9N	Sediment	02/11/16
JF-PDS-7-0-1ft-160212	AVZ9O	Sediment	02/12/16
JF-PDS-7-1-2ft-160212	AVZ9P	Sediment	02/12/16
JF-RB-160212	AVZ9AQ	Water	02/12/16
JF-PDS-2-1-2ft-160210MS	AVZ9FMS	Sediment	02/10/16
JF-PDS-2-1-2ft-160210MSD	AVZ9FMSD	Sediment	02/10/16

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Attachment 1 of the Quality Assurance Project Plan, Addendum No. 2 to the Operations, Monitoring, and Maintenance Plan for Jorgensen Forge Early Action Area (September 2015) and modified outlines of the USEPA Contract Laboratory Program National Functional Guidelines (CLPNFG) for Superfund Organic Methods Data Review (June 2008) and USEPA Contract Laboratory Program National Functional Guidelines (CLPNFG) for Superfund Organic Methods Data Review (October 1999). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Polychlorinated Biphenyls (PCBs) by Environmental Protection Agency (EPA) SW 846 Method 8082A

All sample results were subjected to Stage 2B data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.

U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. Initial Calibration and Initial Calibration Verification

An initial calibration was performed as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 20.0% for all compounds.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 20.0% for all compounds.

III. Continuing Calibration

Continuing calibration was performed at required frequencies.

The percent differences (%D) were less than or equal to 20.0% for all compounds.

IV. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

V. Field Blanks

Sample JF-RB-160212 was identified as a rinsate blank. No contaminants were found with the following exceptions:

Blank ID	Compound	Concentration (ug/L)
JF-RB-160212	Aroclor-1248 Aroclor-1254 Aroclor-1260	0.014 0.033 0.0070

VI. Surrogates/Internal Standards

Surrogates were added to all samples as required by the method. Surrogate recoveries (%R) were not within QC limits for sample JF-PDS-5-0-1ft-160211DL. No data were qualified for samples analyzed at greater than or equal to 5X dilution.

All internal standard areas and retention times were within QC limits.

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

VIII. Laboratory Control Samples/Standard Reference Materials

Laboratory control samples (LCS) were analyzed as required by the method. Percent recoveries (%R) were within QC limits.

Standard reference materials (SRM) were analyzed as required by the method. The Aroclor-1260 result in the SRM was within the QC limits, however, the laboratory also reported Aroclor-1254.

IX. Field Duplicates

Samples JF-PDS-3-1-2ft-160211 and JF-PDS-103-1-2ft-160211 and samples JF-PDS-5-0-1ft-160211 and JF-PDS-105-0-1ft-160211 were identified as field duplicates. No results were detected in any of the samples with the following exceptions:

Compound	Concentration (ug/Kg)		RPD
	JF-PDS-3-1-2ft-160211	JF-PDS-103-1-2ft-160211	
Aroclor-1260	2.5	2.9	15

Compound	Concentration (ug/Kg)		RPD
	JF-PDS-5-0-1ft-160211DL	JF-PDS-105-0-1ft-160211	
Aroclor-1248	700	570U	200
Aroclor-1254	1600	2200	32
Aroclor-1260	530	550	4

X. Compound Quantitation

All compound quantitations met validation criteria with the following exceptions:

Sample	Compound	Finding	Criteria	Flag	A or P
JF-PDS-5-0-1ft-160211	Aroclor-1248 Aroclor-1254 Aroclor-1260	Sample result exceeded calibration range.	Reported result should be within calibration range.	J (all detects) J (all detects) J (all detects)	A

Raw data were not reviewed for Stage 2B validation.

XI. Target Compound Identification

Raw data were not reviewed for Stage 2B validation.

XII. Overall Assessment of Data

The analysis was conducted within all specifications of the method.

In the case where more than one result was reported for an individual sample, the least technically acceptable results were deemed unusable as follows:

Sample	Compound	Flag	A or P
JF-PDS-5-0-1ft-160211	Aroclor-1248 Aroclor-1254 Aroclor-1260	R R R	A
JF-PDS-5-0-1ft-160211DL	All TCL compounds except Aroclor-1248 Aroclor-1254 Aroclor-1260	R	A

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be rejected (R) are unusable for all purposes. Based upon the data validation all other results are considered valid and usable for all purposes.

Jorgensen Forge Early Action Area
Polychlorinated Biphenyls - Data Qualification Summary - SDG AVZ9

Sample	Compound	Flag	A or P	Reason
JF-PDS-5-0-1ft-160211	Aroclor-1248 Aroclor-1254 Aroclor-1260	R R R	A	Overall assessment of data
JF-PDS-5-0-1ft-160211DL	All TCL compounds except Aroclor-1248 Aroclor-1254 Aroclor-1260	R	A	Overall assessment of data

Jorgensen Forge Early Action Area
Polychlorinated Biphenyls - Laboratory Blank Data Qualification Summary - SDG AVZ9

No Sample Data Qualified in this SDG

LDC #: 36049A3b
SDG #: AVZ9
Laboratory: Analytical Resources, Inc.

VALIDATION COMPLETENESS WORKSHEET
Stage 2B

Date: 3/21/16
Page: 1 of 2
Reviewer:
2nd Reviewer:

METHOD: GC Polychlorinated Biphenyls (EPA SW846 Method 8082A)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A / A	
II.	Initial calibration/ICV	A / A	%RSD/ICV ≤ 20
III.	Continuing calibration	A	CCV ≤ 20
IV.	Laboratory Blanks	A	
V.	Field blanks	SW	RB= 18
VI.	Surrogate spikes /15	SW/A	
VII.	Matrix spike/Matrix spike duplicates	A	
VIII.	Laboratory control samples /SRM	A/SW	LCS, SRM
IX.	Field duplicates	SW	D= 10,11 12,15 13,15
X.	Compound quantitation/RL/LOQ/LODs	SW	
XI.	Target compound identification	N	
XII	Overall assessment of data	SW	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1	JF-PDS-6-0-1ft-160209	AVZ9A	Sediment	02/09/16
2	JF-PDS-6-1-2ft-160209	AVZ9B	Sediment	02/09/16
3	JF-PDS-4-0-1ft-160210	AVZ9C	Sediment	02/10/16
4	JF-PDS-4-1-2ft-160210	AVZ9D	Sediment	02/10/16
5	JF-PDS-2-0-1ft-160210	AVZ9E	Sediment	02/10/16
6	JF-PDS-2-1-2ft-160210	AVZ9F	Sediment	02/10/16
7	JF-PDS-1-0-1ft-160210	AVZ9G	Sediment	02/10/16
8	JF-PDS-1-1-2ft-160210	AVZ9H	Sediment	02/10/16
9	JF-PDS-3-0-1ft-160211	AVZ9I	Sediment	02/11/16
10	JF-PDS-3-1-2ft-160211 D	AVZ9J	Sediment	02/11/16
11	JF-PDS-103-1-2ft-160211 D	AVZ9K	Sediment	02/11/16
12	JF-PDS-5-0-1ft-160211 D1	AVZ9L	Sediment	02/11/16
13	JF-PDS-5-0-1ft-160211DL D1	AVZ9LDL	Sediment	02/11/16
14	JF-PDS-5-1-2ft-160211 D1	AVZ9M	Sediment	02/11/16
15	JF-PDS-105-0-1ft-160211 D1	AVZ9N	Sediment	02/11/16
16	JF-PDS-7-0-1ft-160212	AVZ9O	Sediment	02/12/16
17	JF-PDS-7-1-2ft-160212	AVZ9P	Sediment	02/12/16

LDC #: 36049A3b

SDG #: AVZ9

Laboratory: Analytical Resources, Inc.

VALIDATION COMPLETENESS WORKSHEET

Stage 2B

Date: 3/21/16

Page: 2 of 2

Reviewer: FT

2nd Reviewer: CR

METHOD: GC Polychlorinated Biphenyls (EPA SW846 Method 8082A)

	Client ID	Lab ID	Matrix	Date
18	JF-RB-160212	AVZ9AQ	Water	02/12/16
19	JF-PDS-2-1-2ft-160210MS	AVZ9FMS	Sediment	02/10/16
20	JF-PDS-2-1-2ft-160210MSD	AVZ9FMSD	Sediment	02/10/16
21				
22				
23				
24				
25				

Notes:

	MB-021716						
	MB-021916						

VALIDATION FINDINGS WORKSHEET

METHOD: Pesticide/PCBs (EPA SW 846 Method 8081/8082)

A. alpha-BHC	I. Dieldrin	Q. Endrin ketone	Y. Aroclor-1242	GG. Chlordane
B. beta-BHC	J. 4,4'-DDE	R. Endrin aldehyde	Z. Aroclor-1248	HH. Chlordane (Technical)
C. delta-BHC	K. Endrin	S. alpha-Chlordane	AA. Aroclor-1254	II. Arochlor 1262
D. gamma-BHC	L. Endosulfan II	T. gamma-Chlordane	BB. Aroclor-1260	JJ. Aroclor 1268
E. Heptachlor	M. 4,4'-DDD	U. Toxaphene	CC. 2,4'-DDD	KK. Oxychlordane
F. Aldrin	N. Endosulfan sulfate	V. Aroclor-1016	DD. 2,4'-DDE	LL. trans-Nonachlor
G. Heptachlor epoxide	O. 4,4'-DDT	W. Aroclor-1221	EE. 2,4'-DDT	MM. cis-Nonachlor
H. Endosulfan I	P. Methoxychlor	X. Aroclor-1232	FF. Hexachlorobenzene	NN.

Notes:_____

LDC #: 36049A3b

VALIDATION FINDINGS WORKSHEET
Field Blanks

Reviewer: FT
2nd reviewer: AA

METHOD: / GC __ HPLC

Y N N/A Were field blanks identified in this SDG?
Y N N/A Were target compounds detected in the field blanks?

(Circle One) Field Blank / Trip Blank / Atmospheric Blank / Ambient Blank Sample: 18 Rinsate / Equipment Rinsate / Equipment Blank / Source Blank / Other Blanks		(Circle One) Field Blank / Trip Blank / Atmospheric Blank / Ambient Blank Sample: _____ Rinsate / Equipment Rinsate / Equipment Blank / Source Blank / Other ____	
Compound	**Concentration (ug/L)**	**Compound**	**Concentration ( )**
Z	0.014		
AA	0.033		
BB	0.007U		

(Circle One) Field Blank / Trip Blank / Atmospheric Blank / Ambient Blank Sample: _____ Rinsate / Equipment Rinsate / Equipment Blank / Source Blank / Other ____		(Circle One) Field Blank / Trip Blank / Atmospheric Blank / Ambient Blank Sample: _____ Rinsate / Equipment Rinsate / Equipment Blank / Source Blank / Other____	
Compound	**Concentration ( )**	**Compound**	**Concentration ( )**

LDC #: 36049A3b

VALIDATION FINDINDS WORKSHEET
Surrogate Recovery

Page: 1 of 1
Reviewer: FT
2nd Reviewer: CL

METHOD: ✓ **GC** ___ **HPLC**

Are surrogates required by the method? Yes____ or No____.

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Were surrogates spiked into all samples and blanks?

Y (N) N/A Did all surrogate recoveries (%R) meet the QC limits?

#	Sample ID	Detector/ Column	Surrogate Compound	%R (Limits)	Qualifications
	13	NS	surrogate	outside limit ( )	no qual 10X DL
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	

	Surrogate Compound		Surrogate Compound		Surrogate Compound		Surrogate Compound		
A	Chlorobenzene (CBZ)	G	Octacosane	M	Benzo(e)Pyrene	S	1-Chloro-3-Nitrobenzene	Y	Tetrachloro-m- xylene
B	4-Bromofluorobenzene (BFB)	H	Ortho-Terphenyl	N	Terphenyl-D14	T	3,4-Dinitrotoluene	Z	2-Bromonaphthalene
C`	a,a,a-Trifluorotoluene	I	Fluorobenzene (FBZ)	O	Decachlorobiphenyl (DCB)	U	Tripentyltin	AA	Chloro-octadecane
D	Bromochlorobenene	J	n-Triacontane	P	1-methylnaphthalene	V	Tri-n-propyltin	BB	2,4-Dichlorophenylacetic acid
E	1,4-Dichlorobutane	K	Hexacosane	Q	Dichlorophenyl Acetic Acid (DCAA)	W	Tributyl Phosphate	CC	2,5-Dibromotoluene
F	1,4-Difluorobenzene (DFB)	L	Bromobenzene	R	4-Nitrophenol	X	Triphenyl Phosphate		

LDC #: 36049A3b

VALIDATION FINDINGS WORKSHEET
SRM

Reviewer: FT
2nd Reviewer: AL

METHOD: X **GC** __ **HPLC**

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was SRM analyzed for each matrix in this SDG?

Y N N/A Was the SRM recoveries within the limits?

#	SRM	Compound				Associated Samples	Qualifications
			The Aroclor-1260 result in the standard reference material (SRM) was within the QC limits. However, the laboratory also reported Aroclor-1254.				Text

LDC #: 36049A3b

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Page: 1 of 1
Reviewer: FT
2nd reviewer: AL

METHOD: ✓ **GC** ___ **HPLC**

Y N N/A Were field duplicate pairs identified in this SDG?

Y N N/A Were target compounds detected in the field duplicate pairs?

Compound	Concentration (ug/kg)		%RPD Limit (≤ 15 %)	Qualification (Parent only)
	10	11		
BB	2.5	2.9	15	

Compound	Concentration (ug/kg)		%RPD Limit (≤ 15 %)	Qualification (Parent only)
	12	15		
Z	540	5704	200	
AA	1400	2200	44	
BB	590	550	7	

Compound	Concentration (ug/kg)		%RPD Limit (≤ 15 %))	Qualification (Parent only)
	13	15		
Z	700	5704	200	
AA	1600	2200	32	
BB	530	550	4	

LDC #: 36049A3b

VALIDATION FINDINGS WORKSHEET
Compound Quantitation and Reported CRQLs

Reviewer: FT
2nd Reviewer: AL

METHOD: V **GC** __ **HPLC**

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Level IV/D Only

Y N N/A Were CRQLs adjusted for sample dilutions, dry weight factors, etc.?

Y N N/A Did the reported results for detected target compounds agree within 10.0% of the recalculated results?

#	Associated Samples	Compound Name	Findings	Qualifications
	12	Z, AA, BB	x'd cal Range	Jdet/A

Comments: See sample calculation verification worksheet for recalculations

LDC #: 36049A3b

VALIDATION FINDINGS WORKSHEET
Overall Assessment of Data

Page: 1 of 1
Reviewer: FT
2nd Reviewer: a

METHOD: ✓ GC __ HPLC

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

All available information pertaining to the data were reviewed using professional judgement to compliment the determination of the overall quality of the data.

(Y) N N/A Was the overall quality and usability of the data acceptable?

#	Associated samples	Compounds	Findings	Qualifications
	12	Z, AA, BB	x'd cal Range	R/A
	13	all except above	diluted	R/A

Comments: _____

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Jorgensen Forge Early Action Area

LDC Report Date: March 22, 2016

Parameters: Metals

Validation Level: Stage 2B

Laboratory: Analytical Resources, Inc.

Sample Delivery Group (SDG): AVZ9

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
JF-PDS-6-0-1ft-160209	AVZ9A	Sediment	02/09/16
JF-PDS-6-1-2ft-160209	AVZ9B	Sediment	02/09/16
JF-PDS-4-0-1ft-160210	AVZ9C	Sediment	02/10/16
JF-PDS-4-1-2ft-160210	AVZ9D	Sediment	02/10/16
JF-PDS-2-0-1ft-160210	AVZ9E	Sediment	02/10/16
JF-PDS-2-1-2ft-160210	AVZ9F	Sediment	02/10/16
JF-PDS-1-0-1ft-160210	AVZ9G	Sediment	02/10/16
JF-PDS-1-1-2ft-160210	AVZ9H	Sediment	02/10/16
JF-PDS-3-0-1ft-160211	AVZ9I	Sediment	02/11/16
JF-PDS-3-1-2ft-160211	AVZ9J	Sediment	02/11/16
JF-PDS-103-1-2ft-160211	AVZ9K	Sediment	02/11/16
JF-PDS-5-0-1ft-160211	AVZ9L	Sediment	02/11/16
JF-PDS-5-1-2ft-160211	AVZ9M	Sediment	02/11/16
JF-PDS-105-0-1ft-160211	AVZ9N	Sediment	02/11/16
JF-PDS-7-0-1ft-160212	AVZ9O	Sediment	02/12/16
JF-PDS-7-1-2ft-160212	AVZ9P	Sediment	02/12/16
JF-RB-160212	AVZ9AQ	Water	02/12/16
JF-PDS-6-0-1ft-160209MS	AVZ9AMS	Sediment	02/09/16
JF-PDS-6-0-1ft-160209DUP	AVZ9ADUP	Sediment	02/09/16
JF-RB-160212MS	AVZ9AQMS	Water	02/12/16
JF-RB-160212DUP	AVZ9AQDUP	Water	02/12/16

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Attachment 1 of the Quality Assurance Project Plan, Addendum No. 2 to the Operations, Monitoring, and Maintenance Plan for Jorgensen Forge Early Action Area (September 2015) and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines (CLPNFG) for Inorganic Superfund Data Review (October 2004). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Arsenic, Cadmium, Chromium, Copper, Lead, Silver, and Zinc by Environmental Protection Agency (EPA) SW 846 Method 6020A
Mercury by EPA SW 846 Methods 7470A/7471A

All sample results were subjected to Stage 2B data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.

U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition.

All technical holding time requirements were met.

II. ICPMS Tune

The mass calibration was within 0.1 AMU and the percent relative standard deviation (%RSD) was less than or equal to 5%.

III. Instrument Calibration

Initial and continuing calibrations were performed as required by the methods.

The initial calibration verification (ICV) and continuing calibration verification (CCV) standards were within QC limits.

IV. ICP Interference Check Sample Analysis

The frequency of interference check sample (ICS) analysis was met. All criteria were within QC limits.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the methods. No contaminants were found in the laboratory blanks with the following exceptions:

Blank ID	Analyte	Maximum Concentration	Associated Samples
PB (prep blank)	Chromium	0.04 mg/Kg	All sediment samples in SDG AVZ9
PB (prep blank)	Chromium Copper Lead Mercury Silver	0.00011 mg/L 0.000400 mg/L 0.000010 mg/L 0.000010 mg/L 0.000010 mg/L	All water samples in SDG AVZ9

Data qualification by the laboratory blanks was based on the maximum contaminant concentration in the laboratory blanks in the analysis of each analyte. The sample concentrations were either not detected or were significantly greater (>5X blank contaminants) than the concentrations found in the associated laboratory blanks with the following exceptions:

Sample	Analyte	Reported Concentration	Modified Final Concentration
JF-RB-160212	Chromium Copper	0.00041 mg/L 0.0006 mg/L	0.00041U mg/L 0.0006U mg/L

VI. Field Blanks

Sample JF-RB-160212 was identified as a rinsate blank. No contaminants were found with the following exceptions:

Blank ID	Analyte	Concentration (mg/L)
JF-RB-160212	Arsenic Chromium Copper Lead Zinc	0.00004 0.00041 0.0006 0.0001 0.006

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits.

VIII. Duplicate Sample Analysis

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits.

IX. Serial Dilution

Serial dilution was not performed for this SDG.

X. Laboratory Control Samples

Laboratory control samples (LCS) were analyzed as required by the methods. Percent recoveries (%R) were within QC limits.

XI. Field Duplicates

Samples JF-PDS-3-1-2ft-160211 and JF-PDS-103-1-2ft-160211 and samples JF-PDS-5-0-1ft-160211 and JF-PDS-105-0-1ft-160211 were identified as field duplicates. No results were detected in any of the samples with the following exceptions:

Analyte	Concentration (mg/Kg)		RPD
	JF-PDS-3-1-2ft-160211	JF-PDS-103-1-2ft-160211	
Arsenic	2.6	2.5	4
Cadmium	0.0489	0.0361	30
Chromium	11.5	9.0	24
Copper	11.2	9.9	12
Lead	2.26	1.86	19
Mercury	0.01	0.01	0
Silver	0.043	0.036	18
Zinc	25	24	4

Analyte	Concentration (mg/Kg)		RPD
	JF-PDS-5-0-1ft-160211	JF-PDS-105-0-1ft-160211	
Arsenic	9.3	10.2	9
Cadmium	0.50	0.51	2
Chromium	34.3	35.0	2
Copper	39.0	41.5	6
Lead	345	323	7
Mercury	0.08	0.07	13
Silver	0.6	0.6	0
Zinc	160	171	7

XII. Internal Standards (ICP-MS)

Internal standards data were not reviewed for Stage 2B validation.

XIII. Sample Result Verification

Raw data were not reviewed for Stage 2B validation.

XIV. Overall Assessment of Data

The analysis was conducted within all specifications of the methods. No results were rejected in this SDG.

Due to laboratory blank contamination, data were qualified as not detected in one sample.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Based upon the data validation all other results are considered valid and usable for all purposes.

Jorgensen Forge Early Action Area
Metals - Data Qualification Summary - SDG AVZ9

No Sample Data Qualified in this SDG

Jorgensen Forge Early Action Area
Metals - Laboratory Blank Data Qualification Summary - SDG AVZ9

Sample	Analyte	Modified Final Concentration	A or P
JF-RB-160212	Chromium Copper	0.00041U mg/L 0.0006U mg/L	A

LDC #: 36049A4a

VALIDATION COMPLETENESS WORKSHEET

Stage 2B

Date: 3-22-16

SDG #: AVZ9

Page: 1 of 2

Laboratory: Analytical Resources, Inc.

Reviewer: MG

2nd Reviewer:

METHOD: Metals (EPA SW 846 Method 6020A/7471A) / 7470A

MB

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A	
II.	ICP/MS Tune	A	
III.	Instrument Calibration	A	
IV.	ICP Interference Check Sample (ICS) Analysis	A	
V.	Laboratory Blanks	SW	
VI.	Field Blanks	SW	RB = 17
VII.	Matrix Spike/Matrix Spike Duplicates	A	MS
VIII.	Duplicate sample analysis	A	DUP
IX.	Serial Dilution	N	not performed
X.	Laboratory control samples	A	LCS
XI.	Field Duplicates	SW	D = 10 + 11 , D = 12 + 14
XII.	Internal Standard (ICP-MS)	N	not reviewed for Stage 2B
XIII.	Sample Result Verification	N	
XIV.	Overall Assessment of Data	A	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank
SB=Source blank
OTHER:

	Client ID	Lab ID	Matrix	Date
1	JF-PDS-6-0-1ft-160209	AVZ9A	Sediment	02/09/16
2	JF-PDS-6-1-2ft-160209	AVZ9B	Sediment	02/09/16
3	JF-PDS-4-0-1ft-160210	AVZ9C	Sediment	02/10/16
4	JF-PDS-4-1-2ft-160210	AVZ9D	Sediment	02/10/16
5	JF-PDS-2-0-1ft-160210	AVZ9E	Sediment	02/10/16
6	JF-PDS-2-1-2ft-160210	AVZ9F	Sediment	02/10/16
7	JF-PDS-1-0-1ft-160210	AVZ9G	Sediment	02/10/16
8	JF-PDS-1-1-2ft-160210	AVZ9H	Sediment	02/10/16
9	JF-PDS-3-0-1ft-160211	AVZ9I	Sediment	02/11/16
10	JF-PDS-3-1-2ft-160211	AVZ9J	Sediment	02/11/16
11	JF-PDS-103-1-2ft-160211	AVZ9K	Sediment	02/11/16
12	JF-PDS-5-0-1ft-160211	AVZ9L	Sediment	02/11/16
13	JF-PDS-5-1-2ft-160211	AVZ9M	Sediment	02/11/16
14	JF-PDS-105-0-1ft-160211	AVZ9N	Sediment	02/11/16
15	JF-PDS-7-0-1ft-160212	AVZ9O	Sediment	02/12/16

LDC #: 36049A4a

SDG #: AVZ9

Laboratory: Analytical Resources, Inc.

VALIDATION COMPLETENESS WORKSHEET

Stage 2B

Date: 3-22-16

Reviewer: MG

2nd Reviewer: a

METHOD: Metals (EPA SW 846 Method 6020A/7471A)

	Client ID	Lab ID	Matrix	Date
16 1	JF-PDS-7-1-2ft-160212	AVZ9P	Sediment	02/12/16
17 2	JF-RB-160212	AVZ9AQ	Water	02/12/16
18 1	JF-PDS-6-0-1ft-160209MS	AVZ9AMS	Sediment	02/09/16
19 1	JF-PDS-6-0-1ft-160209DUP	AVZ9ADUP	Sediment	02/09/16
20 2	JF-RB-160212MS	AVZ9AQMS	Water	02/12/16
21 2	JF-RB-160212DUP	AVZ9AQDUP	Water	02/12/16
22				
23				
24				
25 1	PBS			
26 2	PBW			

Notes:

LDC #: 36049A4a

VALIDATION FINDINGS WORKSHEET
Sample Specific Element Reference

Reviewer: MG
2nd reviewer:

All circled elements are applicable to each sample.

Sample ID	Matrix	Target Analyte List (TAL)
1→17	Sed/w	Al, Sb, (As), Ba, Be, (Cd), Ca, (Cr), Co, (Cu), Fe, (Pb), Mg, Mn, (Hg), Ni, K, Se, (Ag), Na, Tl, V, (Zn), Mo, B, Si, CN⁻, ___ ___
QC 18→21	↓	Al, Sb, (As), Ba, Be, (Cd), Ca, (Cr), Co, (Cu), Fe, (Pb), Mg, Mn, (Hg), Ni, K, Se, (Ag), Na, Tl, V, (Zn), Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
Analysis Method		
ICP		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
ICP-MS	Sed/w	Al, Sb, (As), Ba, Be, (Cd), Ca, (Cr), Co, (Cu), Fe, (Pb), Mg, Mn, Hg, Ni, K, Se, (Ag), Na, Tl, V, (Zn), Mo, B, Si, CN⁻, ___ ___
GFAA		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___

Comments: (Mercury by CVAA if performed)

LDC #: 36049A4a
SDG #: See Cover
METHOD: Trace metals (EPA SW 864 Method 6010B/6020/7000)
Sample Concentration units, unless otherwise noted: mg/kg

VALIDATION FINDINGS WORKSHEET
PB/ICB/CCB QUALIFIED SAMPLES
Soil preparation factor applied: 25x
Associated Samples: all sediment (>5x)

Reviewer: MG
2nd Reviewer: [illegible]

Analyte	Maximum PB[a] (mg/Kg)	Maximum PB[a] (ug/L)	Maximum ICB/CCB[a] (ug/L)	Action Limit	No Qual's.									
Cr	0.04			0.20										

Sample Concentration units, unless otherwise noted: mg/L
Associated Samples: all water

Analyte	Maximum PB[a] (mg/Kg)	Maximum PB[a] (mg/L)	Maximum ICB/CCB[a] (ug/L)	Action Limit	17									
Cr		0.00011		0.00055	0.00041									
Cu		0.000400		0.00200	0.0006									
Pb		0.000010		0.000050										
Hg		0.000010		0.000050										
Ag		0.000010		0.000050										

Samples with analyte concentrations within five times the associated ICB, CCB or PB concentration are listed above with the identifications from the Validation Completeness Worksheet. These sample results were qualified as not detected, "U".
Note : a - The listed analyte concentration is the highest ICB, CCB, or PB detected in the analysis of each element.

LDC #: 36049A4a

VALIDATION FINDINGS WORKSHEET
Field Blanks

Page: 1 of 1
Reviewer: MG
2nd reviewer: GW

METHOD: Trace Metals (EPA SW 846 Method 6010/6020/7000)

(Y) N N/A Were field blanks identified in this SDG?
(Y) N N/A Were target analytes detected in the field blanks?

Sample: 17 Field Blank / Trip Blank / Rinsate / Other (RB) (circle one)

Analyte	Concentration Units ( )
As	0.00004 (mg/L)
Cr	0.00041 (")
Cu	0.0006 (")
Pb	0.0001 (")
Zn	0.006 (")

Sample: _____ Field Blank / Trip Blank / Rinsate / Other_____ (circle one)

Analyte	Concentration Units ( )

LDC#: 36049A4a

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: MG
2nd Reviewer:

METHOD: Metals (EPA Method 6020A/7470A/7471A)

Analyte	Concentration (mg/Kg)		RPD	
	10	11		
Arsenic	2.6	2.5	4	
Cadmium	0.0489	0.0361	30	
Chromium	11.5	9.0	24	
Copper	11.2	9.9	12	
Lead	2.26	1.86	19	
Mercury	0.01	0.01	0	
Silver	0.043	0.036	18	
Zinc	25	24	4	

V:\FIELD DUPLICATES\FD_inorganic\36049A4a.WPD

Analyte	Concentration (mg/Kg)		RPD	
	12	14		
Arsenic	9.3	10.2	9	
Cadmium	0.50	0.51	2	
Chromium	34.3	35.0	2	
Copper	39.0	41.5	6	
Lead	345	323	7	
Mercury	0.08	0.07	13	
Silver	0.6	0.6	0	
Zinc	160	171	7	

V:\FIELD DUPLICATES\FD_inorganic\36049A4a.WPD

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Jorgensen Forge Early Action Area

LDC Report Date: March 22, 2016

Parameters: Wet Chemistry

Validation Level: Stage 2B

Laboratory: Analytical Resources, Inc./
Materials Testing & Consulting, Inc.

Sample Delivery Group (SDG): AVZ9

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
JF-PDS-6-0-1ft-160209	AVZ9A	Sediment	02/09/16
JF-PDS-6-1-2ft-160209	AVZ9B	Sediment	02/09/16
JF-PDS-4-0-1ft-160210	AVZ9C	Sediment	02/10/16
JF-PDS-4-1-2ft-160210	AVZ9D	Sediment	02/10/16
JF-PDS-2-0-1ft-160210	AVZ9E	Sediment	02/10/16
JF-PDS-2-1-2ft-160210	AVZ9F	Sediment	02/10/16
JF-PDS-1-0-1ft-160210	AVZ9G	Sediment	02/10/16
JF-PDS-1-1-2ft-160210	AVZ9H	Sediment	02/10/16
JF-PDS-3-0-1ft-160211	AVZ9I	Sediment	02/11/16
JF-PDS-3-1-2ft-160211	AVZ9J	Sediment	02/11/16
JF-PDS-103-1-2ft-160211	AVZ9K	Sediment	02/11/16
JF-PDS-5-0-1ft-160211	AVZ9L	Sediment	02/11/16
JF-PDS-5-1-2ft-160211	AVZ9M	Sediment	02/11/16
JF-PDS-105-0-1ft-160211	AVZ9N	Sediment	02/11/16
JF-PDS-7-0-1ft-160212	AVZ9O	Sediment	02/12/16
JF-PDS-7-1-2ft-160212	AVZ9P	Sediment	02/12/16
JF-PDS-6-0-1ft-160209MS	AVZ9AMS	Sediment	02/09/16
JF-PDS-6-0-1ft-160209DUP	AVZ9ADUP	Sediment	02/09/16
JF-PDS-2-0-1ft-160210DUP	AVZ9EDUP	Sediment	02/10/16
JF-PDS-2-0-1ft-160210TRP	AVZ9ETRP	Sediment	02/10/16
JF-PDS-6-0-1ft-160209TRP	AVZ9ATRP	Sediment	02/09/16

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Attachment 1 of the Quality Assurance Project Plan, Addendum No. 2 to the Operations, Monitoring, and Maintenance Plan for Jorgensen Forge Early Action Area (September 2015) and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines (CLPNFG) for Inorganic Superfund Data Review (October 2004). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Grain Size by Puget Sound Estuary Protocols (PSEP) Method
Total Organic Carbon by Plumb Method
Total Solids by Standard Method 2540G
Moisture Content by American Society for Testing and Materials (ASTM) D2216

All sample results were subjected to Stage 2B data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.

U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition.

All technical holding time requirements were met.

II. Initial Calibration

All criteria for the initial calibration of each method were met.

III. Continuing Calibration

Continuing calibration frequency and analysis criteria were met for each method when applicable.

IV. Laboratory Blanks

Laboratory blanks were analyzed as required by the methods. No contaminants were found in the laboratory blanks.

V. Field Blanks

No field blanks were identified in this SDG.

VI. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits.

VII. Triplicates Sample Analysis

Triplicate (TRP) sample analysis was performed on an associated project sample. Results were within QC limits.

VIII. Laboratory Control Samples/Standard Reference Materials

Laboratory control samples (LCS) were analyzed as required by the methods. Percent recoveries (%R) were within QC limits.

Standard reference materials (SRM) were analyzed as required by the methods. The results were within QC limits.

IX. Field Duplicates

Samples JF-PDS-3-1-2ft-160211 and JF-PDS-103-1-2ft-160211 and samples JF-PDS-5-0-1ft-160211 and JF-PDS-105-0-1ft-160211 were identified as field duplicates. No results were detected in any of the samples with the following exceptions:

Analyte	Concentration (%)		RPD
	JF-PDS-3-1-2ft-160211	JF-PDS-103-1-2ft-160211	
Total organic carbon	0.118	0.168	35
Total solids	80.66	80.15	1

Analyte	Concentration (%)		RPD
	JF-PDS-5-0-1ft-160211	JF-PDS-105-0-1ft-160211	
Total organic carbon	0.818	0.696	16
Total solids	74.29	74.35	0

Sieve Size (microns)	Percent Finer Than the Indicated Size (%)		RPD
	JF-PDS-3-1-2ft-160211	JF-PDS-103-1-2ft-160211	
#4 (4750)	99.9	99.4	1
#10 (2000)	99.7	99.2	1
#18 (1000)	97.8	97.5	0
#35 (500)	79.9	79.3	1
#60 (250)	43.0	41.8	3
#120 (125)	20.2	19.5	4
#230 (63)	9.2	9.1	1
(31.0)	5.0	4.8	4
(15.6)	3.3	3.3	0
(7.8)	2.4	2.4	0
(3.9)	1.8	1.8	0
(2.0)	1.4	1.4	0
(1.0)	1.1	1.1	0

Sieve Size (microns)	Percent Finer Than the Indicated Size (%)		RPD
	JF-PDS-5-0-1ft-160211	JF-PDS-105-0-1ft-160211	
#4 (4750)	99.6	95.9	4
#10 (2000)	98.4	94.7	4
#18 (1000)	96.6	92.7	4
#35 (500)	81.6	78.4	4
#60 (250)	40.6	39.0	4
#120 (125)	25.2	24.0	5
#230 (63)	18.9	17.9	5
(31.0)	15.0	14.6	3
(15.6)	10.2	10.0	2
(7.8)	4.5	5.2	14
(3.9)	2.8	3.0	7
(2.0)	2.1	2.2	5
(1.0)	1.4	1.5	7

X. Sample Result Verification

Raw data were not reviewed for Stage 2B validation.

XI. Overall Assessment of Data

The analysis was conducted within all specifications of the methods. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

Jorgensen Forge Early Action Area
Wet Chemistry - Data Qualification Summary - SDG AVZ9

No Sample Data Qualified in this SDG

Jorgensen Forge Early Action Area
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG AVZ9

No Sample Data Qualified in this SDG

LDC #: 36049A6 **VALIDATION COMPLETENESS WORKSHEET** Date: 3-22-16
SDG #: AVZ9 Level III Page: 1 of 2
Laboratory: Analytical Resources, Inc./Materials Testing & Consulting, Inc. Reviewer: MG
2nd Reviewer:

METHOD: (Analyte) Grain Size (PSEP Method), TOC (Plumb), Total Solids (SM 2540G) Moisture Content (ASTM D2216)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A	
II	Initial calibration	A	
III.	Calibration verification	A	
IV	Laboratory Blanks	A	
V	Field blanks	N	
VI.	Matrix Spike/Matrix Spike Duplicates	A	MS
VII.	Duplicate sample analysis	A	TRIP
VIII.	Laboratory control samples	A	LCS/SRM
IX.	Field duplicates	SW	D= 10+11, D= 12+14
X.	Sample result verification	N	
XI	Overall assessment of data	A	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1	JF-PDS-6-0-1ft-160209	AVZ9A	Sediment	02/09/16
2	JF-PDS-6-1-2ft-160209	AVZ9B	Sediment	02/09/16
3	JF-PDS-4-0-1ft-160210	AVZ9C	Sediment	02/10/16
4	JF-PDS-4-1-2ft-160210	AVZ9D	Sediment	02/10/16
5	JF-PDS-2-0-1ft-160210	AVZ9E	Sediment	02/10/16
6	JF-PDS-2-1-2ft-160210	AVZ9F	Sediment	02/10/16
7	JF-PDS-1-0-1ft-160210	AVZ9G	Sediment	02/10/16
8	JF-PDS-1-1-2ft-160210	AVZ9H	Sediment	02/10/16
9	JF-PDS-3-0-1ft-160211	AVZ9I	Sediment	02/11/16
10	JF-PDS-3-1-2ft-160211	AVZ9J	Sediment	02/11/16
11	JF-PDS-103-1-2ft-160211	AVZ9K	Sediment	02/11/16
12	JF-PDS-5-0-1ft-160211	AVZ9L	Sediment	02/11/16
13	JF-PDS-5-1-2ft-160211	AVZ9M	Sediment	02/11/16
14	JF-PDS-105-0-1ft-160211	AVZ9N	Sediment	02/11/16
15	JF-PDS-7-0-1ft-160212	AVZ9O	Sediment	02/12/16
16	JF-PDS-7-1-2ft-160212	AVZ9P	Sediment	02/12/16
17	JF-PDS-6-0-1ft-160209MS	AVZ9AMS	Sediment	02/09/16

LDC #: 36049A6 **VALIDATION COMPLETENESS WORKSHEET** Date: 3-22-16

SDG #: AVZ9 Level III Page: 2 of 2

Laboratory: Analytical Resources, Inc./Materials Testing & Consulting, Inc. Reviewer: MG

2nd Reviewer: ✓

METHOD: (Analyte) Grain Size (PSEP Method), TOC (Plumb), Total Solids (SM 2540G)

	Client ID	Lab ID	Matrix	Date
18	JF-PDS-6-0-1ft-160209DUP	AVZ9ADUP	Sediment	02/09/16
19	JF-PDS-2-0-1ft-160210DUP	AVZ9EDUP	Sediment	02/10/16
20	JF-PDS-2-0-1ft-160210TRP	AVZ9ETRP	Sediment	02/10/16
21	#1 TRP	AVZ9A TRP	Sediment	2/9/16
22				
23	PBS1			
24	PBS2			
25	PBS3			

Notes:

LDC #: 36049A6

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Reviewer: MG
2nd reviewer: a

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter
1→16	Sed	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN (TOC) CR^{6+} ClO_4 (T.S.) (Grain size)
QC 17	↓	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN (TOC) CR^{6+} ClO_4
18, 21	↓	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN (TOC) CR^{6+} ClO_4 (T.S.)
↓ 19, 20	↓	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4 (Grain size)
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4

Comments: _____

LDC#: 36049A6 **VALIDATION FINDINGS WORKSHEET** Page: 1 of 3
Field Duplicates Reviewer: MG
2nd Reviewer: [signature]

Inorganics, Method See Cover

Analyte	Concentration (%)		RPD	
	10	11		
Total Organic Carbon	0.118	0.168	35	
Total Solids	80.66	80.15	1	

V:\FIELD DUPLICATES\FD_inorganic\36049A6a.WPD

Analyte	Concentration (%)		RPD	
	12	14		
Total Organic Carbon	0.818	0.696	16	
Total Solids	74.29	74.35	0	

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VALIDATION FINDINGS WORKSHEET
Field Duplicates

Inorganics: Method See Cover

Sieve Size (microns)	Percent Finer Than the Indicated Size (%)		RPD	
	10	11		
3/8"	100.0	100.0	0	a
#4 (4750)	99.9	99.4	1	
#10 (2000)	99.7	99.2	1	
#18 (1000)	97.8	97.5	0	
#35 (500)	79.9	79.3	1	
#60 (250)	43.0	41.8	3	
#120 (125)	20.2	19.5	4	
#230 (63)	9.2	9.1	1	
31.0	5.0	4.8	4	
15.6	3.3	3.3	0	
7.8	2.4	2.4	0	
3.9	1.8	1.8	0	
2.0	1.4	1.4	0	
1.0	1.1	1.1	0	

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Sieve Size (microns)	Percent Finer Than the Indicated Size (%)		RPD	
	12	14		
3/8"	100.0	100.0	0	a
#4 (4750)	99.6	95.9	4	
#10 (2000)	98.4	94.7	4	

LDC# 36049A6

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: MG
2nd Reviewer: [signature]

Inorganics: Method See Cover

Sieve Size (microns)	Percent Finer Than the Indicated Size (%)		RPD	
	12	14		
#18 (1000)	96.6	92.7	4	
#35 (500)	81.6	78.4	4	
#60 (250)	40.6	39.0	4	
#120 (125)	25.2	24.0	5	
#230 (63)	18.9	17.9	5	
31.0	15.0	14.6	3	
15.6	10.2	10.0	2	
7.8	4.5	5.2	14	
3.9	2.8	3.0	7	
2.0	2.1	2.2	5	
1.0	1.4	1.5	7	

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LDC #: 76049

EDD POPULATION COMPLETENESS WORKSHEET

Anchor

Date: 3·25·16

2nd Reviewer:

The LDC job number listed above was entered by (W).

	EDD Process	Y/N	Init	Comments/Action
I.	EDD Completeness	-		
Ia.	- All methods present?	✓	W	
Ib.	- All samples present/match report?	✓	W	
Ic.	- All reported analytes present?	✓	W	
Id	-10% verification of EDD?	✓	W	
II.	EDD Preparation/Entry	-		
IIa.	- QC Level applied? (EPAStage2B or EPAStage4)	✓	W	
IIb.	- Laboratory EMPC qualified results qualified (J with reason code 23)?	NA	W	
III.	Reasonableness Checks	-		
IIIa.	- Do all qualified ND results have ND qualifier (i.e. UJ)?	NA	W	
IIIb.	- Do all qualified detect results have detect qualifier (i.e. J)?	NA	W	
IIIc.	- If reason codes used, do all qualified results have reason code field populated, and vice versa?	✓	W	
IIId.	- Do blank concentrations in report match EDD, where data was qualified due to blank?	✓	W	
IIIe.	- Were any results reported above calibration range? If so, were results qualified appropriately?	N/A	W	
IIIf.	- Are all results marked reportable "Yes" unless rejected for overall assessment in the data validation report?	✓	W	
IIIg.	-Are there any lab "R" qualified data? / Are the entry columns blank for these results?	NA	W	
IIIh.	- Is the detect flag set to "N" for all "U" qualified blank results?	✓	W	

Notes: *see readme

The attached zipped file contains two files:

File	Format	Description
1) Readme_Jorgensen_032516.doc	MS Word 2003	A "Readme" file (this document).
2) LDC36049_AVZ9_VEDD_20160324.xlsx	MS Excel 2007	A spreadsheet for the following SDG(s): AVZ9 36049A

No discrepancies were observed between the hardcopy data packages and the electronic data deliverables during EDD population of validation qualifiers. A 100% verification of the EDD was not performed.

Please contact Pei Geng at (760) 827-1100 if you have any questions regarding this electronic data submittal.

LABORATORY DATA CONSULTANTS, INC.
2701 Loker Ave. West, Suite 220, Carlsbad, CA 92010 Bus: 760-827-1100 Fax: 760-827-1099

Anchor QEA, LLC
720 Olive Way, Suite 900
Seattle, WA 98101
ATTN: Ms. Cindy Fields

April 5, 2016

SUBJECT: Jorgensen Forge EAA, Data Validation

Dear Ms. Fields,

Enclosed is the final validation report for the fractions listed below. This SDG was received on March 31, 2016. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project #36124:

SDG #	Fraction
AXS8/T16-0435-T16-0437	Polychlorinated Biphenyls, Wet Chemsitry

The data validation was performed under Stage 2B guidelines. The analyses were validated using the following documents, as applicable to each method:

- Attachment 1 of the Quality Assurance Project Plan, Addendum No. 2 to the Operations, Monitoring, and Maintenance Plan for Jorgensen Forge Early Action Area, September 2015
- USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review, June 2008
- USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Method Data Review, October 1999
- USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review, October 2004
- EPA SW 846, Third Edition, Test Methods for Evaluating Solid Waste, update 1, July 1992; update IIA, August 1993; update II, September 1994; update IIB, January 1995; update III, December 1996; update IIIA, April 1998; IIIB, November 2004; Update IV, February 2007

Please feel free to contact us if you have any questions.

Sincerely,

Christina Rink
Project Manager/Chemist

278 pages-SF 1 WEEK TAT

Attachment 1

EDD Stage 2B

LDC #36124 (Anchor Environmental-Seattle WA / Jorgensen Forge EAA)

LDC	SDG#	DATE REC'D	(3) DATE DUE	PCBs (8082A)		Grain Size (PSEP)		TOC (Plumb)		Total Solids (2540G)																											
Matrix: Water/Sediment				W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S
A	AXS8/ T16-0435-T16-0437	03/31/16	04/07/16	0	3	0	3	0	3	0	3																										
Total	T/CR			0	3	0	3	0	3	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12

Shaded cells indicate Stage 4 validation (all other cells are Stage 2B validation). These sample counts do not include MS, MSD, or DUP's.

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Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Jorgensen Forge Early Action Area

LDC Report Date: April 1, 2016

Parameters: Polychlorinated Biphenyls

Validation Level: Stage 2B

Laboratory: Analytical Resources, Inc.

Sample Delivery Group (SDG): AXS8

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
JF-PDS-1-2-3ft-160210	AXS8A	Sediment	02/10/16
JF-PDS-5-2-3ft-160211	AXS8B	Sediment	02/11/16
JF-PDS-7-2-3ft-160212	AXS8C	Sediment	02/12/16
JF-PDS-5-2-3ft-160211MS	AXS8BMS	Sediment	02/11/16
JF-PDS-5-2-3ft-160211MSD	AXS8BMSD	Sediment	02/11/16

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Attachment 1 of the Quality Assurance Project Plan, Addendum No. 2 to the Operations, Monitoring, and Maintenance Plan for Jorgensen Forge Early Action Area (September 2015) and modified outlines of the USEPA Contract Laboratory Program National Functional Guidelines (CLPNFG) for Superfund Organic Methods Data Review (June 2008) and USEPA Contract Laboratory Program National Functional Guidelines (CLPNFG) for Superfund Organic Methods Data Review (October 1999). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Polychlorinated Biphenyls (PCBs) by Environmental Protection Agency (EPA) SW 846 Method 8082

All sample results were subjected to Stage 2B data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.

U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. Initial Calibration and Initial Calibration Verification

An initial calibration was performed as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 20.0% for all compounds.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 20.0% for all compounds.

III. Continuing Calibration

Continuing calibration was performed at required frequencies.

The percent differences (%D) were less than or equal to 20.0% for all compounds with the following exceptions:

Date	Standard	Column	Compound	%D	Associated Samples	Affected Compound	Flag	A or P
03/26/16	CCV	ZB-5	Aroclor-1260	25.2	JF-PDS-1-2-3ft-160210 JF-PDS-5-2-3ft-160211	Aroclor-1242 Aroclor-1254 Aroclor-1260	NA	-
03/26/16	CCV	ZB-5	Aroclor-1260	25.2	JF-PDS-7-2-3ft-160212	Aroclor-1254	J (all detects)	A
03/26/16	CCV	ZB-5	Aroclor-1260	25.2	JF-PDS-7-2-3ft-160212	Aroclor-1242 Aroclor-1260	NA	-

IV. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

V. Field Blanks

No field blanks were identified in this SDG.

VI. Surrogates/Internal Standards

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

All internal standard areas and retention times were within QC limits.

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

VIII. Laboratory Control Samples/Standard Reference Materials

Laboratory control samples (LCS) were analyzed as required by the method. Percent recoveries (%R) were within QC limits.

Standard reference materials (SRM) were analyzed as required by the method. The Aroclor-1260 result in the SRM was within the QC limits, however, the laboratory also reported Aroclor-1254.

IX. Field Duplicates

No field duplicates were identified in this SDG.

X. Compound Quantitation

Raw data were not reviewed for Stage 2B validation.

XI. Target Compound Identification

Raw data were not reviewed for Stage 2B validation.

XII. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to continuing calibration %D, data were qualified as estimated in one sample.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

Jorgensen Forge Early Action Area
Polychlorinated Biphenyls - Data Qualification Summary - SDG AXS8

Sample	Compound	Flag	A or P	Reason
JF-PDS-7-2-3ft-160212	Aroclor-1254	J (all detects)	A	Continuing calibration (%D)

Jorgensen Forge Early Action Area
Polychlorinated Biphenyls - Laboratory Blank Data Qualification Summary - SDG AXS8

No Sample Data Qualified in this SDG

LDC #: 36124A3b
SDG #: AXS8
Laboratory: Analytical Resources, Inc.

VALIDATION COMPLETENESS WORKSHEET
Stage 2B

Date: 4/1/16
Page: 1 of 1
Reviewer: FT
2nd Reviewer: AV

METHOD: GC Polychlorinated Biphenyls (EPA SW846 Method 8082)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A/A	
II.	Initial calibration/ICV	A/A	ICAL / ICV ≤ 20
III.	Continuing calibration	SW	CCV ≤ 20
IV.	Laboratory Blanks	A	
V.	Field blanks	N	
VI.	Surrogate spikes /1>	A	
VII.	Matrix spike/Matrix spike duplicates	A	
VIII.	Laboratory control samples / SRM	A/A	LCS, SRM
IX.	Field duplicates	N	
X.	Compound quantitation/RL/LOQ/LODs	N	
XI.	Target compound identification	N	
XII.	Overall assessment of data	A	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1	JF-PDS-1-2-3ft-160210	AXS8A	Sediment	02/10/16
2	JF-PDS-5-2-3ft-160211	AXS8B	Sediment	02/11/16
3	JF-PDS-7-2-3ft-160212	AXS8C	Sediment	02/12/16
4	JF-PDS-5-2-3ft-160211MS	AXS8BMS	Sediment	02/11/16
5	JF-PDS-5-2-3ft-160211MSD	AXS8BMSD	Sediment	02/11/16
6				
7				
8				
9				
10				
11				
12				

Notes:

MB - 032316							

VALIDATION FINDINGS WORKSHEET

METHOD: Pesticide/PCBs (EPA SW 846 Method 8081/8082)

A. alpha-BHC	I. Dieldrin	Q. Endrin ketone	Y. Aroclor-1242	GG. Chlordane
B. beta-BHC	J. 4,4'-DDE	R. Endrin aldehyde	Z. Aroclor-1248	HH. Chlordane (Technical)
C. delta-BHC	K. Endrin	S. alpha-Chlordane	AA. Aroclor-1254	II. Arochlor 1262
D. gamma-BHC	L. Endosulfan II	T. gamma-Chlordane	BB. Aroclor-1260	JJ. Aroclor 1268
E. Heptachlor	M. 4,4'-DDD	U. Toxaphene	CC. 2,4'-DDD	KK. Oxychlordane
F. Aldrin	N. Endosulfan sulfate	V. Aroclor-1016	DD. 2,4'-DDE	LL. trans-Nonachlor
G. Heptachlor epoxide	O. 4,4'-DDT	W. Aroclor-1221	EE. 2,4'-DDT	MM. cis-Nonachlor
H. Endosulfan I	P. Methoxychlor	X. Aroclor-1232	FF. Hexachlorobenzene	NN.

Notes:_____

LDC #: 36124 A3 b

VALIDATION FINDINGS WORKSHEET
Continuing Calibration

Reviewer: FT
2nd Reviewer: 02

METHOD: V GC __ HPLC

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".
What type of continuing calibration calculation was performed? ___%D or ___%R
Y N N/A Were continuing calibration standards analyzed at the required frequencies?
Y N N/A Did the continuing calibration standards meet the %D / %R validation criteria of ≤20.0% / 80-120%?
Level IV Only
Y N N/A Were the retention times for all calibrated compounds within their respective acceptance windows?

#	Date	Standard ID	Detector/ Column	Compound	%D (Limit ≤ 20.0)	RT (limit)	Associated Samples	Qualifications
	3/26/16 1639	CCV	ZB-5	BB	25.2		All	Jdet/A (ND+Det) qual Y, AA, BB #3 = AA is det

LDC #: 36124A 3b

VALIDATION FINDINGS WORKSHEET
SRM

Reviewer: FT
2nd Reviewer:

METHOD: ✓ **GC** __ **HPLC**

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was SRM analyzed for each matrix in this SDG?
Y N N/A Was the SRM recoveries within the limits?

#	SRM	Compound				Associated Samples	Qualifications
			The Aroclor-1260 result in the standard reference material (SRM) was within the QC limits. However, the laboratory also reported Aroclor-1254.				Text

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Jorgensen Forge Early Action Area

LDC Report Date: April 1, 2016

Parameters: Wet Chemistry

Validation Level: Stage 2B

Laboratory: Analytical Resources, Inc./
Materials Testing & Consulting, Inc.

Sample Delivery Group (SDG): AXS8

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
JF-PDS-1-2-3ft-160210	AXS8A	Sediment	02/10/16
JF-PDS-5-2-3ft-160211	AXS8B	Sediment	02/11/16
JF-PDS-7-2-3ft-160212	AXS8C	Sediment	02/12/16
JF-PDS-1-2-3ft-160210MS	AXS8AMS	Sediment	02/10/16
JF-PDS-1-2-3ft-160210DUP	AXS8ADUP	Sediment	02/10/16
JF-PDS-5-2-3ft-160211DUP	AXS8BDUP	Sediment	02/11/16
JF-PDS-5-2-3ft-160211TRP	AXS8BTRP	Sediment	02/11/16
JF-PDS-1-2-3ft-160210TRP	AXS8ATRP	Sediment	02/10/16

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Attachment 1 of the Quality Assurance Project Plan, Addendum No. 2 to the Operations, Monitoring, and Maintenance Plan for Jorgensen Forge Early Action Area (September 2015) and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines (CLPNFG) for Inorganic Superfund Data Review (October 2004). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Grain Size by Puget Sound Estuary Protocols (PSEP) Method
Total Organic Carbon by Plumb Method
Total Solids by Standard Method 2540G

All sample results were subjected to Stage 2B data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.

U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition.

All technical holding time requirements were met.

II. Initial Calibration

All criteria for the initial calibration of each method were met.

III. Continuing Calibration

Continuing calibration frequency and analysis criteria were met for each method when applicable.

IV. Laboratory Blanks

Laboratory blanks were analyzed as required by the methods. No contaminants were found in the laboratory blanks.

V. Field Blanks

No field blanks were identified in this SDG.

VI. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits.

VII. Triplicates Sample Analysis

Triplicate (TRP) sample analysis was performed on an associated project sample. Results were within QC limits.

VIII. Laboratory Control Samples/Standard Reference Materials

Laboratory control samples (LCS) were analyzed as required by the methods. Percent recoveries (%R) were within QC limits.

Standard reference materials (SRM) were analyzed as required by the methods. The results were within QC limits.

IX. Field Duplicates

No field duplicates were identified in this SDG.

X. Sample Result Verification

Raw data were not reviewed for Stage 2B validation.

XI. Overall Assessment of Data

The analysis was conducted within all specifications of the methods. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

Jorgensen Forge Early Action Area
Wet Chemistry - Data Qualification Summary - SDG AXS8

No Sample Data Qualified in this SDG

Jorgensen Forge Early Action Area
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG AXS8

No Sample Data Qualified in this SDG

LDC #: 36124A6 **VALIDATION COMPLETENESS WORKSHEET** Date: 3-31-16

SDG #: AXS8/~~T16-0435-T16-0437~~ Level III Page: 1 of 1

Laboratory: Analytical Resources, Inc./Materials Testing & Consulting, Inc. Reviewer: MG

2nd Reviewer: ✓

METHOD: (Analyte) Grain Size (PSEP Method), TOC (Plumb), Total Solids (SM 2540G)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A	
II	Initial calibration	A	
III.	Calibration verification	A	
IV	Laboratory Blanks	A	
V	Field blanks	N	
VI.	Matrix Spike/Matrix Spike Duplicates	A	MS
VII.	Duplicate sample analysis	A	TRIP
VIII.	Laboratory control samples	A	LCS/SRM
IX.	Field duplicates	N	
X.	Sample result verification	N	
XI	Overall assessment of data	A	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1	JF-PDS-1-2-3ft-160210	AXS8A	Sediment	02/10/16
2	JF-PDS-5-2-3ft-160211	AXS8B	Sediment	02/11/16
3	JF-PDS-7-2-3ft-160212	AXS8C	Sediment	02/12/16
4	JF-PDS-1-2-3ft-160210MS	AXS8AMS	Sediment	02/10/16
5	JF-PDS-1-2-3ft-160210DUP	AXS8ADUP	Sediment	02/10/16
6	JF-PDS-5-2-3ft-160211DUP	AXS8BDUP	Sediment	02/11/16
7	JF-PDS-5-2-3ft-160211TRP	AXS8BTRP	Sediment	02/11/16
8	JF-PDS-1-2-3ft-160210TRP	AXS8ATRP	Sediment	2/10/16
9				
10				
11				
12				
13				
14	PBS			

MA

Notes:

LDC #: 36174A6

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Page: 1 of 1
Reviewer: MG
2nd reviewer: [illegible]

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter
1→3	sed	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN **TOC** CR^{6+} ClO_4 **Grain size** **T.S.**
QC 4	↓	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN **TOC** CR^{6+} ClO_4 ___ ___
5,8	↓	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN **TOC** CR^{6+} ClO_4 ___ **T.S.**
↓ 6,7	↓	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4 **Grain size** ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4 ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4 ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4 ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4 ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4 ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4 ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4 ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4 ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4 ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4 ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4 ___ ___
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		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4 ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4 ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4 ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4 ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4

Comments: ___

LDC #: 36124

EDD POPULATION COMPLETENESS WORKSHEET

Anchor

Date: 4.4.16

2nd Reviewer:

The LDC job number listed above was entered by W.

	EDD Process	Y/N	Init	Comments/Action
I.	EDD Completeness	-		
Ia.	- All methods present?	✓	W	
Ib.	- All samples present/match report?	✓	W	
Ic.	- All reported analytes present?	✓	W	
Id	-10% verification of EDD?	✓	W	
II.	EDD Preparation/Entry	-		
IIa.	- QC Level applied? (EPAStage2B or EPAStage4)	✓	W	
IIb.	- Laboratory EMPC qualified results qualified (J with reason code 23)?	NA	W	
III.	Reasonableness Checks	-		
IIIa.	- Do all qualified ND results have ND qualifier (i.e. UJ)?	NA	W	
IIIb.	- Do all qualified detect results have detect qualifier (i.e. J)?	✓	W	
IIIc.	- If reason codes used, do all qualified results have reason code field populated, and vice versa?	✓	W	
IIId.	- Do blank concentrations in report match EDD, where data was qualified due to blank?	NA	W	
IIIe.	- Were any results reported above calibration range? If so, were results qualified appropriately?	NA	W	
IIIf.	- Are all results marked reportable "Yes" unless rejected for overall assessment in the data validation report?	✓	W	
IIIg.	-Are there any lab "R" qualified data? / Are the entry columns blank for these results?	NA	W	
IIIh.	- Is the detect flag set to "N" for all "U" qualified blank results?	NA	W	

Notes: *see readme

The attached zipped file contains two files:

File	Format	Description
1) Readme_Jorgensen_040416.doc	MS Word 2003	A "Readme" file (this document).
2) LDC36124_AXS8_VEDD_20160401.xlsx	MS Excel 2007	A spreadsheet for the following SDG(s): AXS8/T16-0435-T16-0437 36124A

No discrepancies were observed between the hardcopy data packages and the electronic data deliverables during EDD population of validation qualifiers. A 100% verification of the EDD was not performed.

Please contact Christina Rink at (760) 827-1100 if you have any questions regarding this electronic data submittal.